Thames Estuary rMCZ no 5

Marine Conservation Zone: SelectionAssessment Document

Version and Issue date	Amendments made
V1.0 07.09.11	Draft final recommendations refined by the RSG and Local Groups in July 2011 and finalised by the RSG 2/3 August 2011.

1. Site name Thames Estuary rMCZ no 5 Contains:- Holehaven Creek recommended Reference Area no 3	**3. Site surface area** 13214 ha 132.14 km^2
2. Site centre location ETRS89 N51 29' 51.682" E0 28' 1.059" N51 29.861' E0 28.018' (**N.B.** WGS 84 UTM 31N coordinates are provided in the map vertices)	**4. Biogeographic region** Southern North Sea

5. Features proposed for designation within Thames Estuary[1]

Feature type	Feature name	Area/no of records[2]
Broad-scale habitats	A2.2 intertidal sand/muddy sand	3.28 km^2
	A2.4 intertidal mixed sediments	0.08 km^2
	A5.1 subtidal coarse sediment	13.76 km^2
	A5.2 subtidal sand	9.37 km^2
	A5.3 subtidal mud	19.88 km^2
Habitat FOCI	Sheltered muddy gravels	21 records
Species FOCI Low mobility	Tentacled Lagoon Worm (*Alkmaria romijni*)	27 records
Species FOCI High mobility	European Eel (*Anguilla anguilla*)	476 records
	Smelt (*Osmerus eperlanus*)	528 records

6. Features within Thames Estuary not proposed for designation[3]

Feature type	Feature name	Comments
Broad-scale habitats	A2.3 intertidal mud	Majority of habitat protected by Thames Estuary and Marshes SPA and all SSSIs bar Holehaven and Inner Thames SSSI
	A2.5 coastal saltmarshes/saline reedbeds	Fully protected by Thames Estuary and Marshes SPA and all SSSIs
	Mosaic of A2.3, A2.5	Fully protected within the Thames and South Thames Estuary and Marshes SSSI and SPA and Benfleet &Southend Marshes SSSI
Habitat FOCI	Rossworm (*Sabellaria spinulosa*)reef	Important but may have been lost recently. Get data from EA. Considerable uncertainty on presence.
	Seagrass beds	Fully Protected within Benfleet and Southend Marshes and South Thames Estuary and marshes SSSIs
Species FOCI Low mobility	Short-snouted seahorse (*Hippocampus hippocampus*)	Known only from Power Station records.

[1] Sources of information relating to these features are listed in Section 13.

[2] Areas have been calculated according to spatial GIS data and are indicative only.A "record" is a survey point where a single individual, population or habitat has been found.

[3] Features may occur in both tables (sections 5 & 6) if the rMCZ overlaps with an existing MPA where the features are protected.

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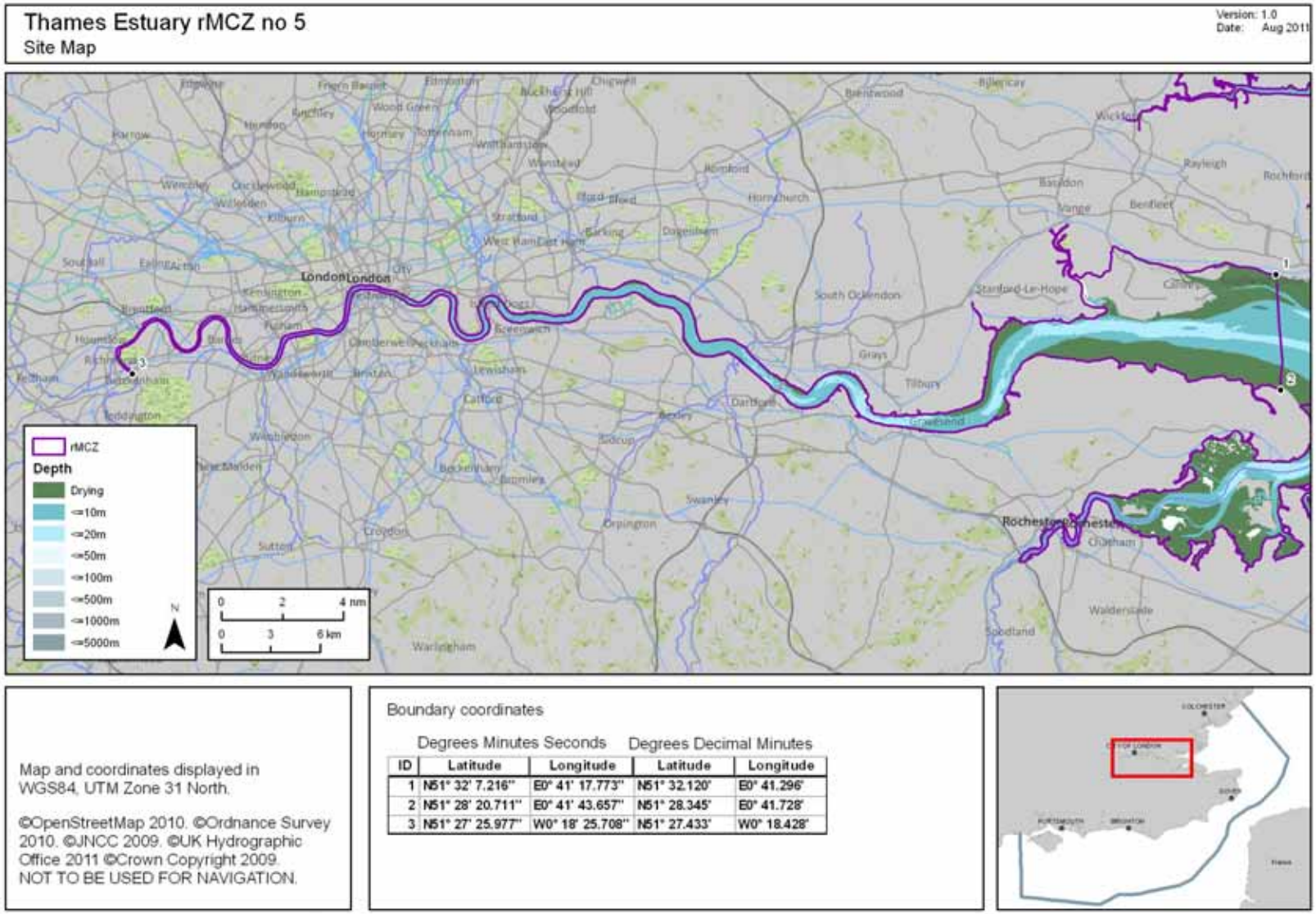
7. Map of site



ID	Latitude	Longitude	Latitude	Longitude
1	N51° 32' 7.216"	E0° 41' 17.773"	N51° 32.120'	E0° 41.296'
2	N51° 28' 20.711"	E0° 41' 43.657"	N51° 28.345'	E0° 41.728'
3	N51° 27' 25.977"	W0° 18' 25.708"	N51° 27.433'	W0° 18.428'

8. Site summary

This site stretches along the greater part of the tidal River Thames from Richmond to the estuary mouth at Southend-on-Sea, and is designed to protect different species and habitats along distinct stretches of the river. As a whole, the site is considered to be an important spawning and nursery ground for various fish species, particularly Smelt (*Osmerus eperlanus*) and European Eel (*Anguilla anguilla).* The western site boundary of Richmond Lock is considered to be the extent of marine conditions within the estuary and thus a natural boundary. The site is aimed at providing the protection required for seasonal seaward migrations of Smelt and European Eels during their migration from freshwater to the sea and their subsequent recruitment as juvenile elvers into the estuary, primarily through the existing mitigation measures and codes of good practice currently in place and monitored by the Environment Agency. Therefore, the western section of the site from Richmond to West Thurrock has no directly specified habitat conservation objectives, other than that specifically required for the Smelt and Eel.

A geographically restricted but important population of Tentacled Lagoon Worm (*Alkmariaromijni)* occurs at Greenhithe. From West Thurrock downstream to the estuary mouth, the site is aimed at ensuring bank-to-bank habitat protection, by extending the existing protection given to broad-scale habitats within the Benfleet &Southend Marshes SSSI and South Thames Estuary & Marshes SSSI into the mid-channel, where subtidal coarse sediment, subtidal sand and subtidal mud habitats occur in a highly dynamic environment alongside sheltered muddy gravels. Although challenging to confirm, this site is also thought to be home to a permanent population of Short-snouted Seahorse, but as there is still some uncertainty as to whether this is a suitable place for protection, the species does not have associated Conservation Objectives.

The rMCZ lies in an area of particularly high economic importance and there many sectors, notably ports, have expressed concern about the potential impact on their sectors. The draft conservation objectives indicate that activities such as commercial anchoring and navigation dredging will need assessment in the area where the Tentacled Lagoon Worm occurs. These discussions have already started between Natural England and the relevant authorities. Benthic trawling levels are considered to be borderline and will need to be monitored. Other habitats were included for protection at the last RSG meeting and will need to be assessed to determine the appropriate conservation objectives.

9. Detailed site description

The following is a description of the site based on extracts from literature held by the Balanced Seas Project and stakeholder correspondence. It does not constitute a complete literature review or ecological description of the site.

This site stretches along the greater part of the tidal River Thames from Richmond to the estuary mouth at Southend-on-Sea, following the mean high water mark and thus including Holehaven Creek and Canvey Island. The Inner Estuary is characterised by a relatively low species diversity and high population density of invertebrates, while the Mid/Outer Estuary is characterised by a greater variety of species occurring at relatively low population densities compared with the inner estuary (Marine Ecological Surveys Ltd 2002).

In the Lower Thames Estuary downstream of West Thurrock, the UKSeaMap/MESH v7 (JNCC) map of broad-scale habitats indicates that the seabed towards the estuary mouth is made up of a combination of coarse-sediments, mixed sediments, sand and mud, some of which the Environment Agency considers may be in near pristine condition and important for preserving marine ecosystem services, especially in regard to fisheries (Environment Agency information), though loss of intertidal habitat will continue due to sea level rise & coastal squeeze (Environmental Agency 2009) (see

Broad-scale habitats map). Since the intertidal mud is protected on both banks of the estuary under SSSI designations, the MCZ includes those currently unprotected broad-scale habitats in order to extend protection across the entire seabed in this downstream part of the site. Upstream of West Thurrock, only intertidal broad-scale habitats have been mapped (UKSeaMap/MESH v7), and these are not explicitly listed for protection. However, some of these intertidal habitats are considered to be integral to the lifecycle and ecology of the European Eel (A*nguilla anguilla)* and Common Smelt (*Osmerus eperlanus)* and it is expected that this MCZ should provide protection for these habitats where necessary as supporting features for these two highly mobile species, with advice and further investigation as required from the Environment Agency.

The Lower Thames Estuary also contains numerous location records for sheltered muddy gravels (data from Environment Agency compiled from Thames gateway intertidal survey July 2002, London Gateway Benthic Monitoring Surveys 2002-5 & 2007, Thames Tideway data 1998-2008 and Thames gateway intertidal biology of Lower Thames 2002), which are found close to the northern bank (see FOCI map).

A geographically restricted population of Tentacled Lagoon Wormoccurs at Greenhithe (Environment Agency database of compiled benthic surveys), which EA research suggests is the best example of this species in the region (Balanced Seas Thames Site Meeting Report, February, 2011). Some stakeholders expressed concern that these data would still not show the full distribution of the species, and others felt that the records may not be accurate. Environment Agency representatives have suggested the precise location would not seem to be the habitat that the species might typically be associated with (i.e. stable conditions of reduced salinity combined with mud/silty substrate).

As a whole, the site is considered an important spawning and nursery ground for various fish species, particularly Smelt and European Eel. According to the Environment Agency, Richmond Lock represents the marine/freshwater boundary, and is therefore a good upstream limit for the site to reflect the behaviour and migration patterns of the species (Balanced Seas Thames Site Meeting Report, February, 2011). In their multi-method sampling surveys for estuaries, the Environment Agency have collected abundant records for both species throughout the Upper and Lower Thames Estuary, and the estuary has the second highest density of eels in all surveyed estuaries (Environment Agency 2010a). In its paper on Smelt in rivers and estuaries in England, the Environment Agency (2010b) says 'Smelt gather below Gravesend in February and March prior to migrating upstream to spawn in March/April. Mass spawning takes place on sub-tidal gravels just below the low tide mark, mainly at night between Battersea and Wandsworth. Most of the adult fish then descend to the lower estuary. Very early post-larvae are often taken atMillwall and Greenwich, suggesting hatching may take place just downstream of the narrow inner city reaches. Post-larvae then ascend the river utilising selective tidal stream transport (Colclough et al, 2002). Smelt as young as 0+ fish can be taken as far upstream at Richmond by late June. Most of the juvenile fish descend to the lower estuary by the early autumn.' The rMCZ for of the Thames Estuary is aimed at providing the necessary protection required for the seasonal migration of both species, primarily through the existing mitigation measures and codes of good practice currently in place and monitored by the Environment Agency. A recommendation was also made (Balanced Seas Thames Site Meeting Report, February, 2011), though not ever explicitly followed up by the RSG, that satisfactory protection of the Eel throughout its lifecycle would require protection up to the limit of all the tidal creeks in the Estuary.

Two FOCI have not been included for protection in this site. Numerous records show that Rossworm (*Sabellaria spinulosa*) reef occurs in the site, though there has been considerable stakeholder discussion regarding the continued presence of this habitat following channel dredging operations

and whether these 'reef' records legitimately meet the 'reef' criteria (national contract data, DEFRA MB102 2C, Environment Agency database.) As such it has not been identified for protection within the MCZ. Although the Thames Estuary 2100 Habitat Inventory contains no occurrences of Rossworm that would constitute a 'reef' in the Thames Estuary (Middleton 2009, MSc thesis), Rossworm may provide an important function regarding habitat recovery after disruption, as it is tolerant to poor water quality and reefs are able to form on areas of soft sediment after the initial colonisation of a small area of hard substrate. Some stakeholders suggested that this habitat should therefore be reconsidered as a feature for protection, were it found to be present during the proposed 6-yearly site monitoring. Similarly, a single record for Short-snouted seahorse (*Hippocampus hippocampus)* provided by the Seahorse Trust demonstrates that these species have been found in the area and surveys done by the Zoological Society of London (ZSL information) found several individuals. However, given the lack of evidence for a breeding population, this species was not selected for protection in the MCZ.

In addition to the ENG features, the Thames is considered to be important for Dover Sole (*Soleasolea*), River Lamprey (*Lampetrafluviatilis*), Sea Lamprey (*Petromyzonmarinus*), Twait Shad (*Alosafallax*), Salmon (*Salmosalar*), Flounder (*Platichthysflesus*), Bass (*Dicentrarchuslabrax*), Whiting (*Merlangiusmerlangus*), Herring (*Clupeaharengus*), Sprat (*Sprattussprattus*) and Cod (*Gadusmorhua*) ((Middleton 2009, MSc thesis). RSG Stakeholders (Essex/Kent Inshore Task Group Meeting, Dec 2010) have suggested that peat exposures occur throughout the site, and although the project cannot confirm this with spatial data, the Wildlife Trusts may hold further information and distributional data. The area is among the Key Inshore Biodiversity Areas in the Balanced Seas Region recommended as an MCZ, by the South East England Biodiversity Forum (SEEBF, 2010).

Recognised as an invasive alien species, Mitten Crabs have drastically increased from 1976 to 1993 around the Thames Estuary area which has been noted as a matter of concern since further population expansion can eventually threaten freshwater habitats/communities and upset the balance of resident ecosystems in the Thames (Clark 1998). The angling community has suggested that other alien species, such as Japanese Knotweed, Asiatic Clams, Zebra Mussel and Himalayan Balsam are also threatening the Thames ecosystem.

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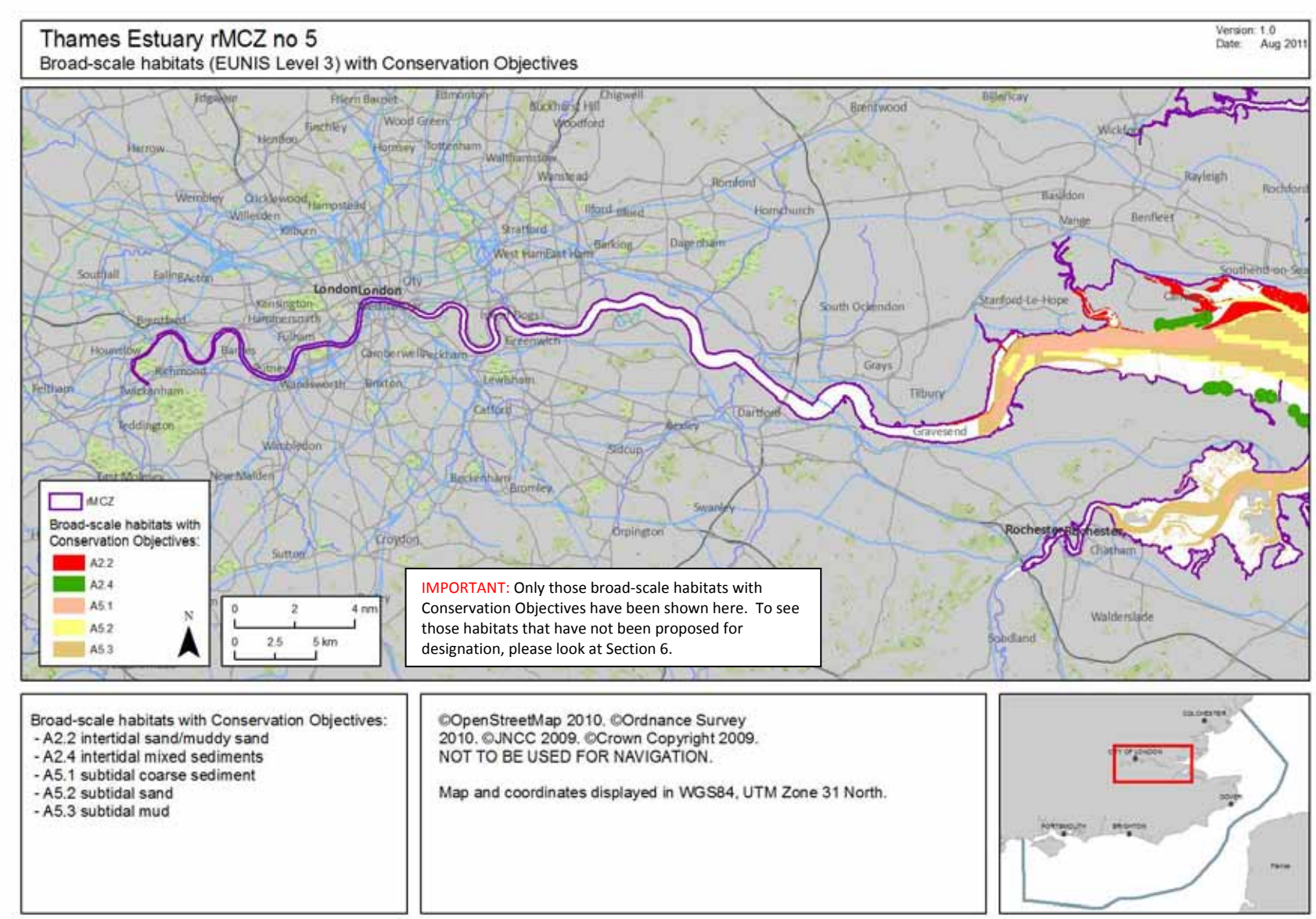

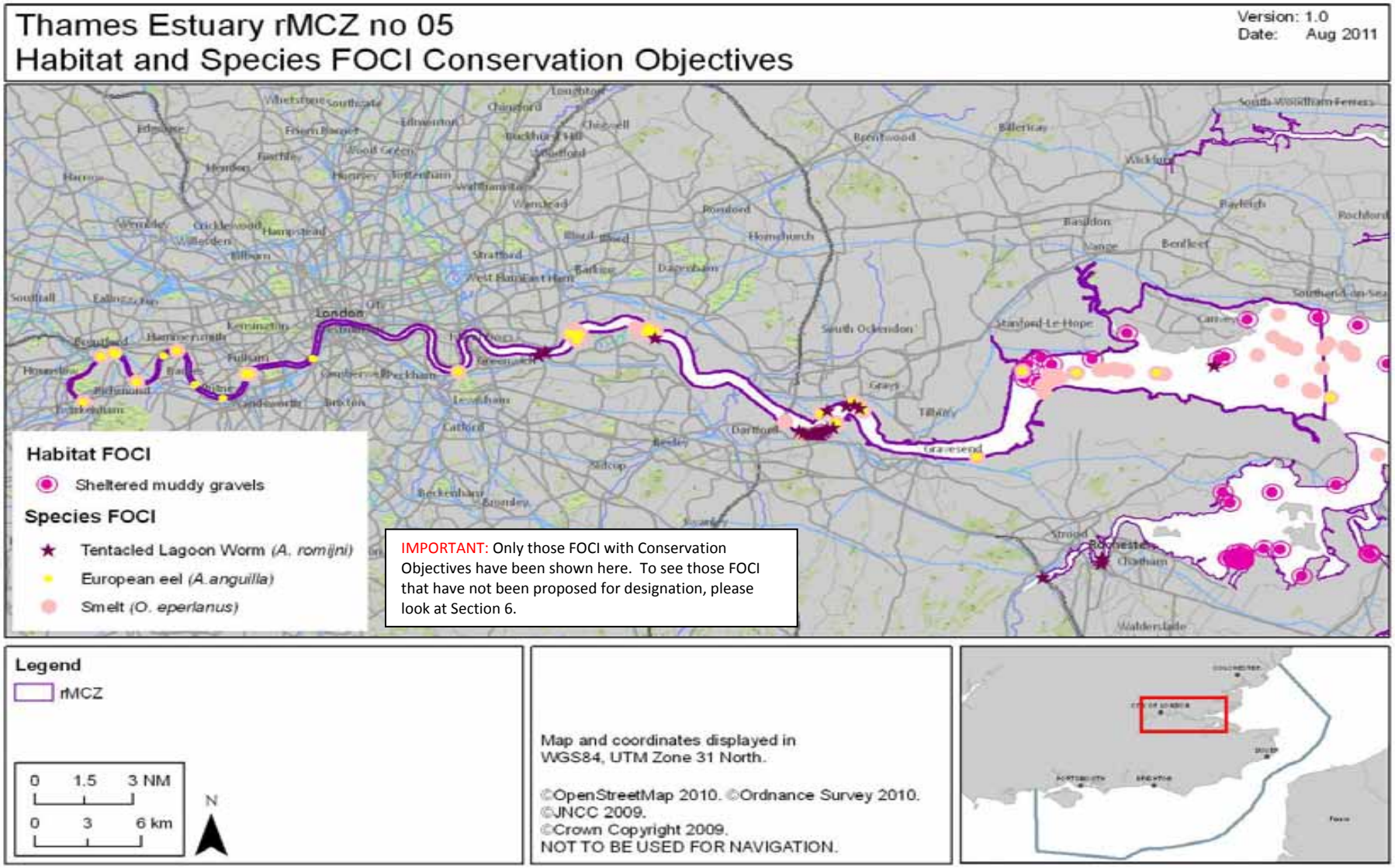
Thames Estuary rMCZ no 05
Habitat and Species FOCI Conservation Objectives
Version: 1.0
Date: Aug 2011
Habitat FOCI
Sheltered muddy gravels
Species FOCI
Tentacled Lagoon Worm (A. romijni)
European eel (A.anguilla)
Smelt (O. eperlanus)
IMPORTANT: Only those FOCI with Conservation Objectives have been shown here. To see those FOCI that have not been proposed for designation, please look at Section 6.
Legend
rMCZ
0 1.5 3 NM
0 3 6 km
N
Map and coordinates displayed in WGS84, UTM Zone 31 North.
©OpenStreetMap 2010. ©Ordnance Survey 2010.
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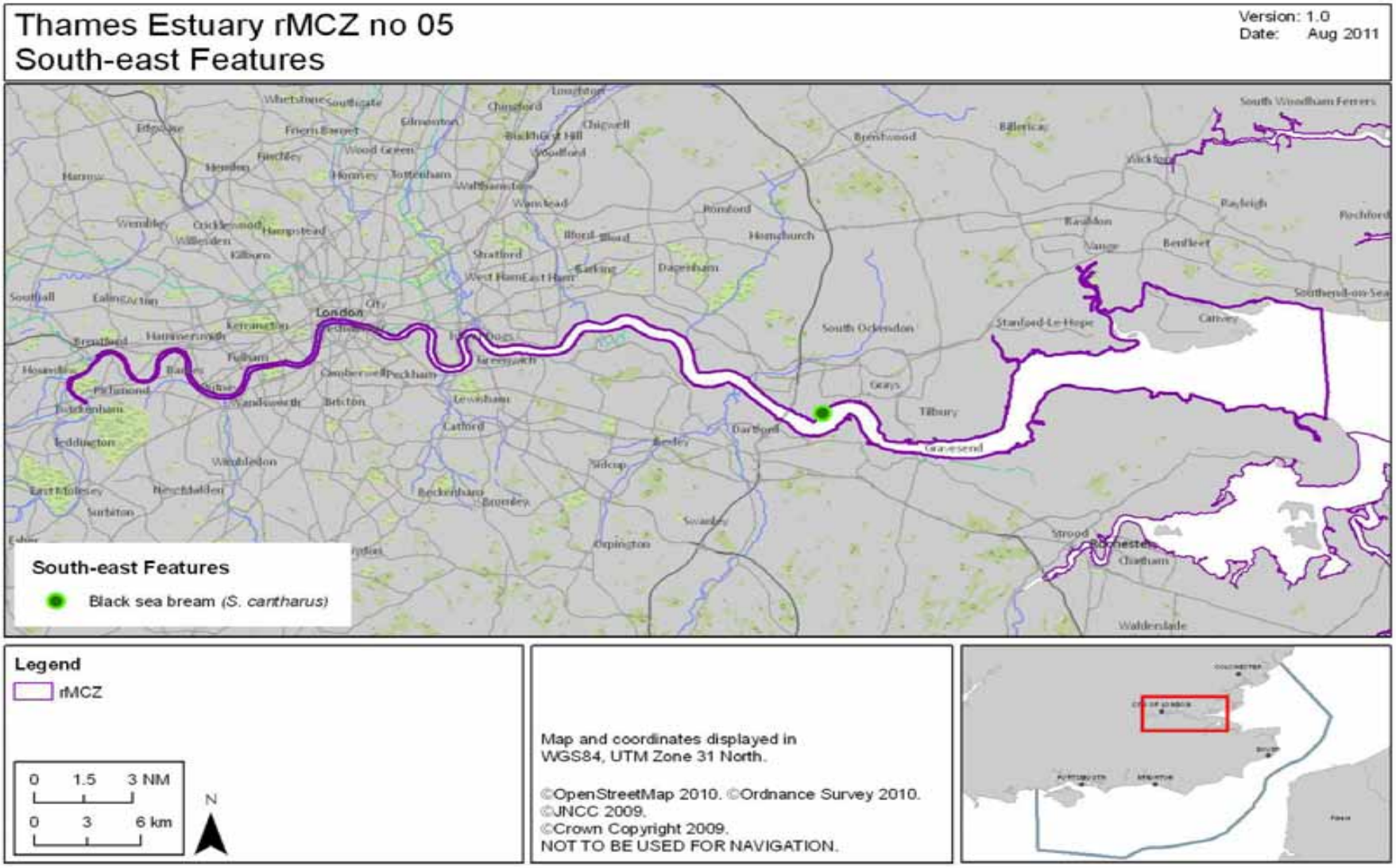
NOT TO BE USED FOR NAVIGATION.

Thames Estuary rMCZ no 5



10. Site boundary

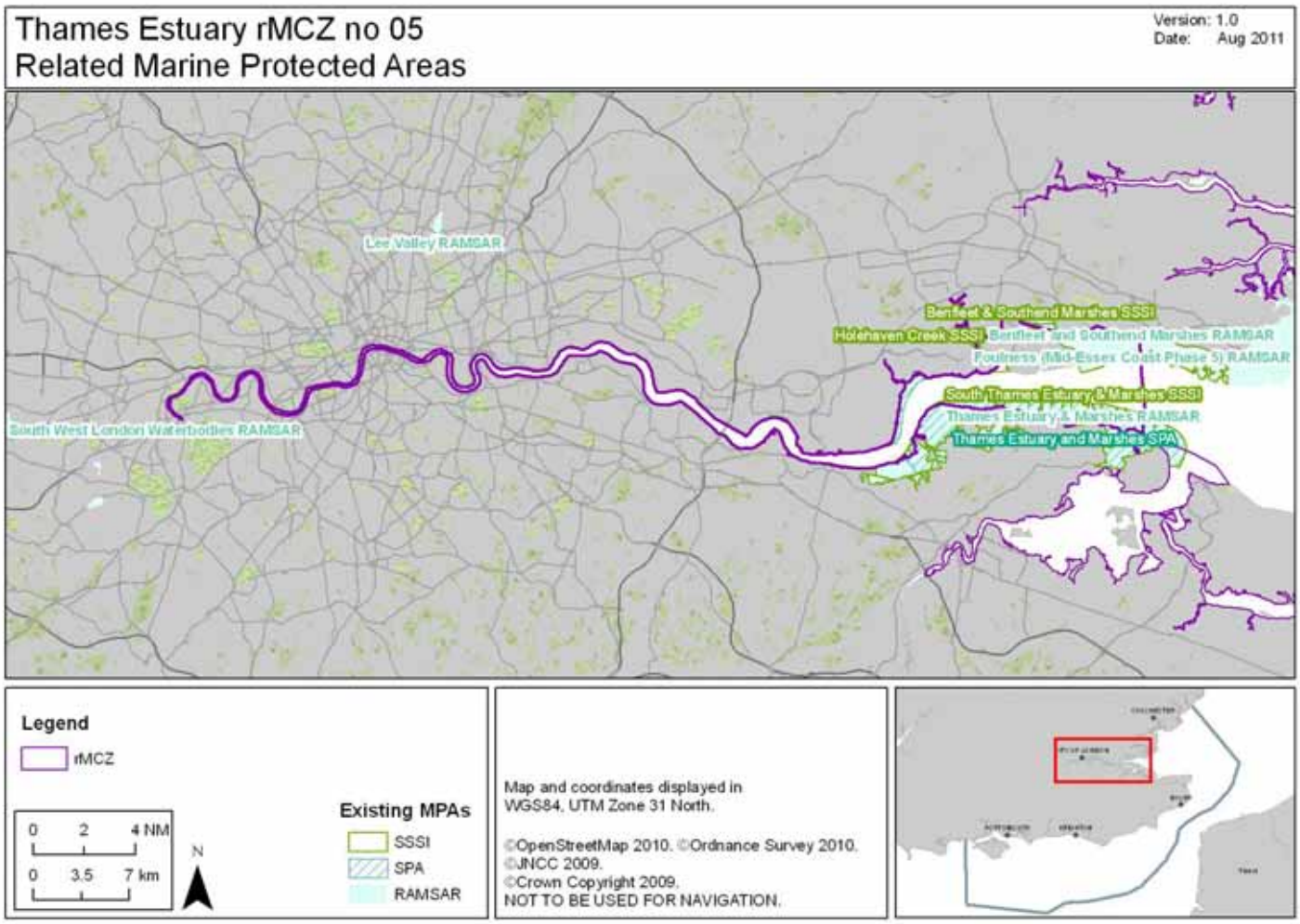
The western landward boundary at Richmond Lock has been identified as the extent of marine conditions within the estuary and incorporate the important Smelt spawning and nursery areas and migration routes for European Eel. The eastern seaward boundary was set to encompass the majority of the subtidal habitats necessary to meet ENG targets and to avoid the two large anchorages just further east. The boundary is oriented northwards, aligning with the Westcliff-on-Sea railway station at Southend on Sea.

11. Conservation objectives

Individual conservation objective forms for each feature can be found in Appendix 1. For a site-based summary of the conservation objectives and proposed management measures, please see Section 15.

12. Sites to which this site is related

The site partially overlaps the Benfleet &Southend Marshes RAMSAR, South Thames Estuary & Marshes SSSI and the Thames Estuary & Marshes SPA. The site completely contains Holehaven Creek SSSI andrRA 3 Holehaven Creek.



13. **Supporting documentation**(information relating to ENG features only)

Information	Type of information	Source	Name of survey	Date
Broad-scale habitats	Modelled and survey data	JNCC V.7 Combined UKSeaMap and MESH	Combined	June 2011
Rossworm (*Sabellaria spinulosa*) reef	Survey	Peninsular and Oriental (P&O) (Sourced from: Environment Agency database)	London Gateway Benthic Monitoring Survey, done annually.	2002-2007
Rossworm (*Sabellaria spinulosa*) reef	Survey	EA - Thames Laboratory (Sourced from: Environment Agency database)	Thames Tideway data 1998-2008	1998-2009
Rossworm (*Sabellaria spinulosa*) reef	Survey	National contract data. DEFRA MB102 2C	JNCCMNCR10000925	1996
Seagrass beds	Survey	National contract data. DEFRA MB102 2C		2007-2008
Sheltered muddy gravels	Survey	Unicomarine Ltd. (Sourced from: Environment Agency database)	Two surveys around proposed marina at Greenhithe	16-Oct-07
Sheltered muddy gravels	Survey	PosfordHaskoning Ltd(Sourced from: Environment Agency database)	Thames gateway intertidal survey July 2002	01-Jan-03
Sheltered muddy gravels	Survey	Peninsular and Oriental (P&O) (Sourced from: Environment Agency database)	London Gateway Benthic Monitoring Survey, done annually	2002-2007
Sheltered muddy gravels	Survey	EA - Thames Laboratory (Sourced from: Environment Agency database)	Thames Tideway data 1998-2008	1998-2009
European Eel (*Anguilla Anguilla)*	Survey	National contract data, DEFRA MB102 2B	CEFAS	
Smelt (*Osmerus eperlanus)*	Survey	National contract data, DEFRA MB102 2B	CEFAS	
Tentacled lagoon worm (*Alkmaria romijni*)	Survey	Unicomarine Ltd. (Sourced from Environment Agency database)	Two surveys around proposed marina at Greenhithe	17-May-07

References(additional information can be found in the Bibliography)

CLARK, P.F., RAINBOW, P.S. ROBINS, R.S. SMITH, B. YEOMANS, W.E. THOMAS, M. & DOBSON, G. 1998.The Alien Chinese Mitten Crab, *Eriocheirsinensis* [Crustacea: Decapoda: Brachyura], in the Thames Catchment. *Journal of the Marine Biological Association***78**: 1215 – 1221.

COLCLOUGH, S.R., GRAY, G. BARK, A.& KNIGHTS, B. 2002. Fish and Fisheries of the TidalThames: management of the modern resource, research aims and future pressures. *Journal of Fish Biology***61**: (Supplement A) 64- 73.

ELLIS, J.R., READDY, L. & SOUTH, A. 2010.*Accessing and Developing the Required Biophysical Dataset and Data Layers for Marine Protected Areas Network Planning and Wider Marine Spatial Planning Purposes.Report No 15: Task 2B Distribution of Highly Mobile Species.* DEFRA, London.

ENVIRONMENTAL AGENCY. 2009. *Thames Estuary 2100: Managing Flood Risk through London and the Thames Estuary. Strategic Environmental Assessment: Environmental Report Summary.* Environmental Agency, London.

ENVIRONMENT AGENCY. 2010a.*The European Eel Anguilla anguilla (L.) and Marine Conservation Zones.* Environmental Agency, London.

ENVIRONMENT AGENCY. 2010b.*Smelt Osmerus eperlanus (L.) in rivers and estuaries in England – 2010.*Environmental Agency, London.

MARINE ECOLOGICAL SURVEYS LTD. 2002 Seasonal Changes in Fish &Epibenthos of the Lower Thames Estuary. Marine Ecological Surveys Ltd, Bath.

MIDDLETON, C. 2009.*The Thames Estuary: An Evidence Base for Areas That Should be Protected Through Marine Conservation Zones Legislation Following the Enactment of the Marine and Coastal Access Bill.* MSc Thesis.Imperial College

SEELEY, B., HIGGS, S. LEAR, D. EVANS, J. NEILLY, M. CAMPBELL, M. WILKES, P. & ADAMS, L. 2010. *Accessing and Developing the Required Biophysical Dataset and Data Layers for Marine Protected Areas Network Planning and Wider Marine Spatial Planning Purposes. Report No 16: Mapping of Protected Habitats (Task 2C)*. DEFRA, London.

SOUTH EAST ENGLAND BIODIVERSITY FORUM (SEEBF) 2010. *Key Inshore Biodiversity Areas in the Balanced Seas Region for Recommendation as Marine Conservation Zones*. Letter and list to RSG and Balanced Seas Project Team, 22 Nov 2010.

14. Stakeholder support for this site

The RSG as a group reached consensus that this site should be put forward in their final recommendations. It should be noted that the Thames Estuary Partnership will provide a useful stakeholder forum for taking forward further discussions about this site.

Individual sectors wishing to note their support or concerns about the site recorded the following at the final RSG meeting in August 2011; their comments have been transcribed verbatim from the form that they completed:

SECTOR	ORGANISATION	COMMENT for Thames Estuary rMCZ 5
Yachting	RYA	Assumed that all COs are maintain. Support subject to this. 'Recover' would cause major objections.
Kite Surfing	British Kite Surfing Association	Supported inequitably.
Sea Angling		Thames Estuary support at the level maintain.
Fishing - under 10s (static gear)		(Tick)
Fishing - FPO, beam trawling		I have no real knowledge of this area, or expertise, but fisheries sector overriding principle is that "current activities must be allowed to continue".
Fishing - Over 10s, FPO, trawling sector (under and over 10m)	Gilson Co.	Happy.
Shipping	Chamber of Shipping	Anchorage activity must not be affected. Cumulative effect of lack of maratime space with OREI must be accounted for and management restrictions must not be extended upstream along river Thames.
Birds	RSPB	Thames - support.
Wildlife Trusts	Hampshire Wildlife Trust	I support the site but with all maintain targets I question whether designation will bring any noticeable benefit.
Marine ecology	Seasearch	Support site designation although little will change if all the COs are maintain. Would have preferred this to joinwith the Medway Estuary MCZ, but this was opposed by fishing interests.
Marine Wildlife	Marine Conservation Society	Support. Subtidal sand should be recover for bottom trawling.
Statutory environmental	Environment Agency	Broadly support - endorse proposals for smelt.
IFCA	Kent & Essex IFCA	General support for proposal - need to consider private fisheries.
Heritage and Archaeology	English Heritage	Thames Estuary. Support as long as various I+E activities (research) on foreshore allowed to continue.

15. Site summary of conservation objectives (COs) and proposed management measures

A conservation objective (CO) is a statement describing the desired quality of the feature. Existing MPAs in the UK use the term *Favourable Condition* to represent the desired state of their features. Some pressures caused by human activities may stop the feature attaining favourable condition if present at sufficient intensity.

MAINTAIN means that the *stated levels of activity* currently occurring on the feature are considered acceptable, but features will be monitored and restrictions may have to be introduced if the condition declines.

RECOVER means that restrictions may be necessary on the activity causing the pressure, in order to allow the feature to recover to favourable condition. It does not necessarily mean that the activity will be prohibited, as other mitigation measures might be appropriate (e.g. change in gear type, reduction of intensity, seasonal restrictions, etc)

The table below documents the draft COs for ALL the features listed for protection within the site, as established by JNCC and NE through the Vulnerability Assessment (VA) process[4] and then sense-checked at the national level[5]. Where a RECOVER objective is noted, the associated activity causing the pressure is indicated. In some cases, where information and data warranted it, the RSG chose to adopt the changes to COs recommended by the public authorities: Inshore Fisheries and Conservation Authorities (IFCAs), Marine Management Organisation (MMO), Environment Agency (EA) or Natural England. Changes were only accepted when recommended by these authorities and have been clearly noted. Where the VA has not yet been undertaken, or there is considerable uncertainty surrounding the accuracy of the information being used to recommend a change to the conservation objective, it has been noted as 'TO BE ASSESSED'. Local and regional stakeholders were given the opportunity to comment on the COs and potential management measures and to provide additional information that might not have been taken into account in the VA work.

For greater detail on discussions relating to the site and the network, please refer to both RSG and Local Group stakeholder meeting reports at www.balancedseas.org.

[4]The process of establishing conservation objectives is outlined in the Conservation Objectives Guidance (JJNCC /NE 2011)

[5]VAresults were standardised across all four regional projects but the fisheries activity data is still undergoing assessment.

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Feature	draft CO	Activity exerting pressure	IFCA/MMO/EA/NE Comments	Stakeholder comments on draft COs and potential management measures
A2.2 intertidal sand/muddy sand	MAINTAIN		The vulnerability assessment and resulting CO were completed for the final RSG meeting in August and were therefore not discussed by the Local Group meeting in July	
A2.4 intertidal mixed sediments	MAINTAIN		The vulnerability assessment and resulting CO were completed for the final RSG meeting in August and they were therefore not discussed by the Local Group meeting in July.	
A5.1 Subtidal coarse sediment	MAINTAIN			In response to SNCB request for further information, the LG noted (July 2011): • Limited anchorages at Mucking Creek (the creek dries out for long periods of time and therefore isn't used heavily) and Blythe Sands, Cliffe Pools • Canvey Island has heavy industry traffic and there is maintenance dredging • All maintenance dredging undertaken under a protocol
A5.2 Subtidal sand	MAINTAIN		During the Vulnerability Assessment, NE had noted that numbers of benthic trawling vessels shown in the Fishermap data are approaching those that would require a RECOVER CO and the CO will need to be verified through the SNCB sense check.	
A5.3 Subtidal mud	MAINTAIN			
Tentacled lagoon worm	RECOVER	Extraction - navigational dredging (capital, maintenance)	IFCA recommend that management be integrated throughout the Thames NE clarified at the RSG meeting (2/3 Aug 2011) that after meeting with the PLA to review their activities it was found that this anchorage is not used very much at all and therefore this CO will probably change to MAINTAIN during the National Sense Check EA feel that the main impact to the species is loss of habitat through development, were this to occur. Increased scour, leading from a change in habitat type from mud to coarser sediment could change the distribution of the feature.	At the RSG (2/3 Aug 2011), PLA noted that this feature was found during only one EIA and further surveys should be undertaken to ascertain its full distribution and range.
	RECOVER	Shipping (anchoring)		Some LG members (July 2011) suggested this CO should be changed to MAINTAIN as there is no overlap with either navigational dredging or anchoring. The Lagoon Worm population occurs in shallow water and good management practices are already in place through the PLA, which has to manage dredging and other activities in relation to protected species under the Wildlife & Countryside Act. • Commercial anchorages are managed by the PLA within their jurisdiction areas. Historically small vessels have anchored in the area, but access is only possible for shallow draft vessels; NE and PLA will liaise to discuss anchorage locations in relation to the Lagoon Worm. • There is a maintenance dredging protocol in place; the Dredging Liaison Group reviews all dredging licences for their environmental impact. Some alteration to

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Feature	draft CO	Activity exerting pressure	IFCA/MMO/EA/NE Comments	Stakeholder comments on draft COs and potential management measures
				dredging methods might be required but this would be acceptable – there are potentially secondary effects from water injection dredging but this is not allowed if contaminants are found in sediments. With the introduction of new licences for dredging through the MMO in 2012, this will in any case be reviewed. • Some participants were concerned that the Greenhithe population was only found as a result of a survey in that area and thus the species may have a much wider distribution if searched for. However the species is limited by salinity, and probably does not occur upstream of the Thames Barrier.
Smelt	MAINTAIN		The EA have stated in personal communications with the project team that they will be happy to work with the PLA to ensure that any management of Smelt necessary will not impact PLA activities (Tom Cousins to Amy Pryor)	In response to SNCB request for further information, the LG noted (July 2011): • Not recreationally fished • Pair trawlers target smelt along the Yantlet Coast during August for six weeks • Pollution (sewage) events correlate with low recruitment levels of smelt into the estuary – Tideway Tunnel is the mitigation for this and will eliminate 37 out of 50 CSOs. (but eels are more susceptible than smelt) • The seven year construction period of the Tideway Tunnel may have an impact on migratory species (might lead to short term damage to smelt spawning sites), but EIAs are required and the EA are involved. EA don't think there will be any major impacts and the maritime community fully support the tunnel • There is dredging at Kew but the protocols in place are thought to be adequate
European Eel	MAINTAIN		EA working with developers of structures to ensure adherence to eel migration needs under the WFD and eel management plans	
Sheltered muddy gravels	MAINTAIN			In response to SNCB request for further information, the LG noted (July 2011): • Moorings at Benfleet Creek on the north side of Canvey Island and in front of Southend and Stanford le Hope Nature Reserve overlap with shelter muddy gravel records but activity intensity is considered low enough for a CO of maintain

16. Evolution of the site recommendations

This area was identified as a broad area of interest early on in the process, as stakeholders agreed that the Thames Estuary is an extremely important tidal river (particularly for fish spawning and nursery grounds) that merits additional protection of its habitats, despite the significant environmental changes caused by such heavy human activity in the area.The future of the site was debated, due to stakeholder concerns about whether some of the features proposed for protection (e.g. Rossworm reef) were still there following disturbance by dredging activity, but the site progressed to a dMCZ under the assumption that it remained a good area for recovery. During the Thames site meeting, the western boundarywas extended to Richmond Lock in order to fully protect the tidal reaches of the estuary necessary for comprehensive Smelt and Eel protection. Moving the eastern boundary to link up the Thames Estuary and Medway Estuary MCZs as a single area for management was considered during meetings, but was rejected due to the impact on the local fishing fleets and the likely displacement this might cause, and because this would not have specifically contributed to the ENG targets.

For greater detail on discussions relating to the site and the network, please refer to both RSG and Local Group stakeholder meeting reports at www.balancedseas.org.

17. Implications for stakeholders

The following additional issues are associated with this site:

- Heavy human use of the estuary occurs throughout, but recommendations have been made with the understanding that many existing mitigation measures and codes of good practice are already in place and should not change the *status quo* greatly. The Port of London Authority (PLA) has nevertheless expressed very serious concerns regarding any potential restrictions to their activities, whereas there are also concerns that the presence of extensive port developments in this area may not be fully compatible with the aims of a potential MCZ
- Capital dredging is being carried out as part of the London Gateway Development. Maintenance dredging may occur in the future to maintain operational depths. Despite the EIA undertaken prior to dredging, fishermen feel this could be the cause of unusual declines in European Eel, Common Smelt and other features of interest.
- Maintenance dredging occurs in all areas of the Thames for the navigational channels and for berths. A maintenance dredging framework, approved by Natural England, has been in place since 2003, and ensures that environmental factors are considered; the Thames Estuary Partnership Dredging Liaison Group reviews all dredging licences for their environmental impact.
- Potential conflict between shipping activity, particularly anchoring, and features of importance
- Cable laying operations should be considered with regard to further development of this MCZ as the cables data held by the Project may not be comprehensive
- Potential impacts on water quality from industrial activity.
- The Crown Estate have noted 4 active power cables, 4 active unknown cables, a proposed CCS pipeline and licenses for dredging and wildfowling, but support the site.

This list represents only the major issues associated with the site. To see all stakeholder discussions, please refer to the Balanced Seas RSG and Local Group meeting reports at www.balancedseas.org.